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REMARKS

In light of the commercial situation, it has been decided to cancel all of the pending claims and present claims to preferred species of the inventions covered by the earlier patents on which the present case claims priority. For the Examiner's convenience, a marked up set of the claims of the issued patents are attached hereto so the Examiner can readily identify the difference between the present claims and those of the earlier patents. There is basis in this application for all of the values recited in the parent patents since they were incorporated by reference herein.

The Massol and Lakatos references applied in the last Office Action in this case were also considered by the Examiner and the broader claims in the issued patents were found to be patentable there over. For the same reasons and also for the reason set forth in the responses filed in the present application heretofore, it is respectfully submitted that the claims pending in the present application are also patentable over these references.

There is already a terminal disclaimer of record in this case and therefore no obviousness-type double patenting rejection would be appropriate.

Finally, 3 references were crossed out in the IDS citation list attached to the IDS. C37 is a German regulation as it existed in September 2000 and the substance is described in paragraphs 9-11 of A39. C45 was cited to show that there was a DIN standard which showed burning off the binder for measuring properties at high temperature, as corroboration of the assertions in paragraphs 58-60 of A43. since the Examiner has acknowledged consideration of A39 and A43, there appears to be no need to resubmit those documents. However, the undersigned's files indicate that C52 was submitted with an English translation. Another copy is submitted herewith together with an art listing form for the convenience of the Examiner.

The early consideration and allowance of this application is respectfully solicited.

Dated: May 7, 2004

Respectfully submitted,

By _____

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The modified Gamble's solution has the following composition:

	g/l
$MgCl_2.6H_2O$	0.212
NaCl	7.120
$CaCl_2.2H_2O$	0.029
Na_2SO_4	0.079
Na_2HPO_4	0.148
$NaHCO_3$	1.950
(Na_2-tartrate).$2H_2O$	0.180
(Na_3-citrate).$2H_2O$	0.152
90% lactic acid	0.156
Glycine	0.118
Na-pyruvate	0.172
Formalin	1 ml

The fibre diameter distribution is determined for each sample by measuring the diameter of at least 200 individual fibres by means of the intercept method and a scanning electron microscope or optical microscope (1000× magnification). The readings are used for calculating the specific surface of the fibre samples, taking into account the density of the fibres.

Based on the dissolution of SiO_2 (network dissolution), the specific thickness dissolved was calculated and the rate of dissolution established (nm/day). The calculations are based on the SiO_2 content in the fibres, the specific surface and the dissolved amount of Si.

In this specification, the sintering temperature is determined by the following test protocol.

A sample (5×5×7.5 cm) of mineral wool made of the fibre composition to be tested is placed in a furnace pre-heated to 700° C. After 1.5 hours exposure the shrinkage and the sintering of the sample are evaluated. The method is repeated each time with a fresh sample and a furnace temperature 50° C. above the previous furnace temperature until the maximum furnace temperature is determined, at which no sintering or no excessive shrinkage of the sample is observed.

In this specification, the viscosity in poise at 1400° C. is calculated according to Bottinga and Weill, American Journal of Science Volume 272, May 1972, page 455–475.

The following are examples of the invention.

In each example, a composition was formed by blending appropriate portions of raw materials and was melted in a crucible furnace and was fiberised by the cascade spinner technique. The analyses of the compositions and their properties are quoted in the following tables. Products A to Q are products according to the invention.

Product V has an analysis similar to commercial slag wool and it will be observed that it has a relatively low aluminium content, a high calcium content and a rather low melt viscosity and a moderate dissolution value at pH 7.5. Product X is somewhat similar to the slag wool V but still has a melt viscosity that is rather low for convenient spinning. Further, the fibre thermal stability is low due to the low content of FeO and MgO.

Product Y is a high aluminium product but the proportions of all the components are such that the melt viscosity is too high for convenient spinning.

Product Z is similar to a conventional rock wool product with normal good product properties but has a very low dissolution rate at pH 4.5. It has a rather high silica content and a rather low alumina content.

Fibre Types	SiO_2 %	Al_2O_3 %	TiO_2 %	FeO %	CaO %	MgO %	Na_2O %	K_2O %	Visc. poise 1400° C.	Diss. rate pH 7.5 (st) nm/day	Diss. rate pH 4.5 (st) nm/day	Sintering temp ° C.
A	34.5	28.0	1.8	3.3	25.4	5.6	0.6	0.8	21.2	9.5	34.8	>800
B	36.2	26.3	1.9	4.9	17.7	10.8	1.0	1.1	19.4	6.8	45.1	>800
C	38.3	25.0	1.7	3.0	24.9	5.6	0.7	0.8	24.7	7.4	53.8	>800
D	38.1	24.7	1.8	4.6	17.4	11.3	1.2	0.8	20.0	7.9	64.2	>800
E	43.2	20.0	1.6	5.0	16.6	11.5	1.2	0.8	22.8	5.0	57.9	>800
F	43.2	19.8	1.5	3.4	24.7	5.6	1.0	0.8	27.1	4.8	47.0	>800
G	47.7	19.4	0.8	3.7	16.6	10.8	0.4	0.4	34.7	3.0	21.0	>800
H	43.7	18.8	3.6	5.4	16.4	9.7	1.8	0.7	25.1	5.8	38.6	>800
I	45.6	18.1	1.5	5.3	16.5	9.7	2.5	0.7	30.8	3.1	44.4	>800
J	46.9	18.9	0.5	3.3	17.0	9.5	3.4	0.5	44.0	0.9	35.2	>800
K	44.1	18.7	1.6	5.2	16.5	9.8	3.3	0.7	30.3	2.6	41.1	>800
L	39.6	24.3	1.8	3.2	21.1	6.7	1.8	0.8	30.8	5.7	49	>800
M	43.8	20.4	1.2	10.3	15.6	8.3	0.2	0.3	21.9	3.9	39.7	>1000
N	42.9	23.2	0.7	8.8	17.5	5.1	0.6	1.4	36.8	—	45.9	>900
O	43.1	19.9	1.6	10.1	15.0	9.3	0.6	0.4	19.8	4.6	51.9	>1000
P	37.8	18.3	0.9	12.0	15.8	10.1	4.7	0.3	15.0	10.2	61.5	>1000
Q	40.0	22.2	2.0	7.5	15.2	10.7	1.5	0.8	19.4	7.1	61.1	>1000
V	42.7	8.8	0.3	0.4	36.9	9.4	0.7	0.3	8.2	13.9	41.1	>700
X	43.1	14.0	0.7	0.5	34.3	5.2	0.7	1.5	15.2	1.5	59.8	>700
Y	39.7	32.8	1.7	7.0	15.7	2.1	0.3	0.7	100.0	7.8	59.3	>1000
Z	46.9	13.2	3.0	6.4	17.1	9.4	2.6	1.3	23.7	2.0	3.0	>1000

The novel fibres may be provided in any of the forms conventional for MMV fibres. Thus they may be provided as a product consisting of loose, unbonded fibres. More usually they are provided with a bonding agent, for instance as a result of forming the fibres and connecting them in conventional manner. Generally the product is consolidated as a slab, sheet or other shaped article.

Products according to the invention may be formulated for any of the conventional purposes of MMV fibres, for instance as slabs, sheets, tubes or other shaped products that are to serve as thermal insulation, fire insulation and protection or noise reduction and regulation, or in appropriate shapes for use as horticultural growing media, or as free fibres for reinforcement of cement, plastics or other products or as a filler.

We claim:

1. A product comprising man-made vitreous fibres formed of a composition which includes, by weight of oxides,

$SiO_2 + Al_2O_3$ below 68%

SiO_2 32 to 48%
Al_2O_3 18 to 30%
CaO 10 to 30%
MgO 5 to 20%
FeO 5 to below 10%
Na_2O+K_2O 0 to 10%
TiO_2 0 to 4%
Other Elements 0 to below 8%

wherein the composition has a viscosity at 1400° C. of 12 to 70 poise,

and wherein the fibres have (a) a dissolution rate of at least 20 nm per day when measured at a pH of 4.5, and (b) a sintering temperature of at least 800° C.

2. A product according to claim 1 in which the amount of FeO is from 5 to below 8%.

3. A product according to claim 1 in which the amount of Al_2O_3 is at least 19%.

4. A product according to claim 1 in which the amount of CaO is at least 18%.

5. A product according to claim 1 in which the amount of SiO_2 is at least 35%.

6. A product according to claim 1 in which the composition has a viscosity of 15 to 40 poise at 1400° C.

7. A product according to claim 1 in which the composition has a viscosity of 18 to 30 poise at 1400° C.

8. A product according to claim 1 in which the fibres have a sintering temperature of at least 1000° C.

9. A product according to claim 1 in which the amount of $SiO_2+Al_2O_3$ is 60 to 75% and the amount of Na_2O+K_2O is 0 to 7%.

10. A product according to claim 1 in which the amount of SiO_2 is 34 to 43%, the amount of Al_2O_3 is 19 to 28%, the amount of CaO is 14 to 25%, the amount of MgO is 6 to 15%, the amount of FeO is 5 to 8%, and the amount of Na_2O+K_2O is below 5%.

11. A product according to claim 1 in which the fibres have a dissolution rate at pH 7.5 of less than 15 nm per day.

12. A product according to claim 1 in which the amount of $SiO_2+Al_2O_3$ is 55 to 72%.

13. A product according to claim 1 in which the amount of $SiO_2+Al_2O_3$ is 61 to 68%.

14. A product according to claim 1 in which the amount of Al_2O_3 is 20 to 26%.

15. A product according to claim 1 in which the amount of MgO is at least 8% and the amount of FeO is from 6 to below 10%.

16. A product according to claim 1 in which the composition has a liquidus temperature of 1240 to 1340° C.

17. A product according to claim 1 in which the amount of SiO_2 does not exceed 42%.

* * * * *

based on the SiO_2 content in the fibres, the specific surface and the dissolved amount of Si.

Fibre Types	SiO_2 %	Al_2O_3 %	TiO_2 %	FeO %	CaO %	MgO %	Na_2O %	K_2O %	SUM	Vis. poise 1400° C.	Diss. rate pH 7.5 (st) nm/day	Diss. rate pH 4.5 (st) nm/day	Sintering temp ° C.
A	34.5	28.0	1.8	3.3	25.4	5.6	0.6	0.8	100.0	21.2	9.5	34.8	>800
B	36.2	26.3	1.9	4.9	17.7	10.8	1.0	1.1	100.0	19.4	6.8	45.1	>800
C	38.3	25.0	1.7	3.0	24.9	5.6	0.7	0.8	100.0	24.7	7.4	53.8	>800
D	38.1	24.7	1.8	4.6	17.4	11.3	1.2	0.8	100.0	20.0	7.9	64.2	>800
E	43.2	20.0	1.6	5.0	16.6	11.5	1.2	0.8	100.0	22.8	5.0	57.9	>800
F	43.2	19.8	1.5	3.4	24.7	5.6	1.0	0.8	100.0	27.1	4.8	47.0	>800
G	47.7	19.4	0.8	3.7	16.6	10.8	0.4	0.4	100.0	34.7	3.0	21.0	>800
H	43.7	18.8	3.6	5.4	16.4	9.7	1.8	0.7	100.0	25.1	5.8	38.6	>800
I	45.6	18.1	1.5	5.3	16.5	9.7	2.5	0.7	100.0	30.8	3.1	44.4	>800
J	46.9	18.9	0.5	3.3	17.0	9.5	3.4	0.5	100.0	44.0	0.9	35.2	>800
K	44.1	18.7	1.6	5.2	16.5	9.8	3.3	0.7	100.0	30.3	2.6	41.1	>800
L	39.6	24.3	1.8	3.2	21.7	6.7	1.8	0.8	100.0	30.8	5.7	49	>800
M	43.8	20.4	1.2	10.3	15.6	8.3	0.2	0.3	100.0	21.9	3.9	39.7	>1000
N	42.9	23.2	0.7	8.8	17.5	5.1	0.6	1.4	100.0	36.8	—	45.9	>900
O	43.1	19.9	1.6	10.1	15.0	9.3	0.6	0.4	100.0	19.8	4.6	51.9	>1000
P	37.8	18.3	0.9	12.0	15.8	10.1	4.7	0.3	100.0	15.0	10.2	61.5	>1000
Q	40.0	22.2	2.0	7.5	15.2	10.7	1.5	0.8	100.0	19.4	7.1	61.1	>1000
R	45.4	14.5	1.6	5.6	15.3	7.2	9.0	0.9	100.0	39.9	3.1	48.1	>1000
S	45.3	17.5	1.1	5.7	20.3	7.8	1.7	0.6	100.0	25.9	1.8	48.6	>1000
T	43.1	14.0	0.7	0.5	34.3	5.2	0.7	1.5	100.0	15.2	1.5	59.8	>700
U	37.2	16.1	1.6	3.3	21.5	10.1	9.3	1.0	100.0	29.2	5.2	48.0	>800
V	42.9	16.6	1.7	6.4	16.8	9.6	5.2	0.8	100.0	25.3	3.1	21.9	>1000
W	38.9	16.4	1.4	8.4	20.0	7.9	6.4	0.6	100.0	20.2	9.5	33.0	>1000
X	42.5	16.4	1.7	5.8	21.1	6.3	5.4	0.8	100.0	27.1	4.1	32.9	>1000
1	42.7	8.8	0.3	0.4	36.9	9.4	0.7	0.3	100.0	8.2	13.9	41.1	>700
2	39.7	32.8	1.7	7.0	15.7	2.1	0.3	0.7	100.0	100.0	7.8	59.3	>1000
3	46.9	13.2	3.0	6.4	17.1	9.4	2.6	1.3	100.0	23.7	2.0	3.0	>1000

In this specification, the sintering temperature is determined by the following test protocol.

A sample (5×5×7.5 cm) of mineral wool made of the fibre composition to be tested is placed in a furnace pre-heated to 700° C. After 1.5 hours exposure the shrinkage and the sintering of the sample were evaluated. The method is repeated each time with a fresh sample and a furnace temperature 50° C. above the previous furnace temperature until the maximum furnace temperature, at which no sintering or no excessive shrinkage of the sample is observed, was determined.

In this specification, the viscosity in poise at 1400° C. is calculated according to Bottinga and Weill, American Journal of Science Volume 272, May 1972, page 455–475.

The following are examples of the invention.

Compositions were formed by blending appropriate proportions of raw materials as shown in the table and each was melted in a crucible furnace and was fiberised by the cascade spinner technique. The melt viscosity and solubility of each was determined. The analyses of the compositions and their properties are quoted in the following tables. In the invention, any of compositions A to X are judged to be suitable and are selected for the subsequent manufacture of MMVF products which are labelled as having good biological solubility. Those having viscosity above 20 and pH 4.5 solubility above 30 are preferred.

Product 1 is similar to commercial slag wool and gives a poor viscosity. Product 2 is a high aluminium product but the proportions of all the components are such that the melt viscosity is too high for convenient spinning. Product 3 is similar to a conventional rock wool product with normal good product properties but has a very low dissolution rate at pH 4.5. Accordingly products 1, 2 and 3 are not selected for use in the manufacture of biologically soluble MMV fibre products.

The selected fibres may be provided in any of the forms conventional for MMV fibres. Thus they may be provided as a product consisting of loose, unbonded fibres. More usually, they are provided with a bonding agent, for instance as a result of forming the fibres and connecting them in conventional manner. Generally the product is consolidated as a slab, sheet or other shaped article.

Products according to the invention may be formulated for any of the conventional purposes of MMV fibres, for instance as slabs, sheets, tubes or other shaped products that are to serve as thermal insulation, fire insulation and protection or noise reduction and regulation, or in appropriate shapes for use as horticultural growing media, or as free fibres for reinforcement of cement, plastics or other products or as a filler.

~~What is claimed is:~~

~~80~~. A method of making man-made vitreous fibre product comprising selecting a mineral melt composition which has a viscosity at 1400° C. of 10 to 70 poise at a pH in the range 4–5 and provides fibres which have a dissolution rate of at least 20 nm per day when measured at a pH of 4.5 ~~and a sintering temperature of at least 800° C.~~ and which includes, by weight of oxides,

above 16

SiO_2	32 to 48%
Al_2O_3	~~10~~ to 30%
CaO	10 to 28%
MgO	2 to 20%
FeO	2 to 15%
$Na_2O + K_2O$	0 to 12%
TiO_2	0 to 4%
Other Elements	0 to 8%

and forming the man-made vitreous fibres from the selected composition.

2. The method according to claim 1 in which ~~the amount of Al_2O_3 is above 16% up to 28%,~~ the amount of MgO is at least 5% up to 20%, and the amount of iron, measured as FeO, is up to 10%.

3. The method of claim 2 in which the amount of iron, measured as FeO, is at least 5% but below 10%.

4. The method according to claim 2 in which the composition has a viscosity of at least 12 poise at 1400° C. and the fibres have a dissolution rate at pH 7.5 below 15 nm per day.

5. The method according to claim 1 in which the composition has a viscosity of 15 to 40 poise at 1400° C. and the fibres have a sintering temperature of a t least 1000° C.

6. The method according to claim 1 in which Al_2O_3 is 18–30%, $SiO_2+Al_2O_3$ is 60–75%, FeO is 2–12%, Na_2O+K_2O is 0–7%, TiO_2 is 0–4% and other elements is 0–8%.

7. The method according to claim 6 in which the composition has a liquidus temperature of 1240° C. to 1340° C.

8. The method of claim 1 in which the amount of Al_2O_3 is at least 18%.

9. Vitreous fibres which are biologically acceptable, utilizing fibres of a composition which includes, by weight of oxides,

SiO_2	32 to 48%
Al_2O_3	~~12~~ to 30%
CaO	10 to 28%
MgO	2 to 20%
FeO	2 to 15%
$Na_2O + K_2O$	0 to 12%
TiO_2	0 to 4%
Other Elements	0 to 8%

said composition has a viscosity at 1400° C. of 10 to 70 poise at a pH in the range 4–5, a dissolution rate of at least 20 nm per day when measured at a pH of 4.5 ~~and a sintering temperature of at least 800° C.~~

10. The fibres according to claim 9 in which ~~the amount of Al_2O_3 is above 16% up to 28%~~ the amount of MgO is at least 5% up to 20%, and the amount of iron, measured as FeO, is up to 10%.

11. The fibres of claim 10 in which the amount of iron, measured as FeO, is at least 5% but below 10%.

12. The fibres according to claim 9 in which the composition has a viscosity of at least 12 poise at 1400° C. and the fibres have a dissolution rate at pH 7.5 below 15 nm per day.

13. The fibres according to claim 12 in which the composition has a viscosity of 15 to 40 poise at 1400° C. and the fibres have a sintering temperature of at least ~~1000~~ 800° C.

14. The fibres according to claim 9 in which Al_2O_3 is 18–30%, $SiO_2+Al_2O_3$ is 60–75%, FeO is 2–12%, Na_2O+K_2O is 0–7%, TiO_2 is 0–4% and other elements is 0–8%.

15. The fibres according to claim 9 in which the composition has a liquidus temperature of 1240° C. to 1340° C.

16. The fibres of claim 9 in which the amount of Al_2O_3 is at least 18%.

~~17. A product comprising man-made vitreous fibres~~ formed of a composition having an analysis, as oxides, which includes:

SiO_2	32 to 48%
Al_2O_3	12 to 30%
CaO	10 to 28%
MgO	2 to 20%
FeO	2 to 20%
$Na_2O + K_2O$	6 to 12%
TiO_2	0 to 4%
Other Elements	0 to 8%

said composition has a viscosity at 1400° C. of 10 to 70 poise, wherein the fibres have (a) a dissolution rate at pH 4.5 of at least 20 nm per day and (b) a sintering temperature of at least 800° C.

18. A product according to claim 17 in which the amount of MgO is at least 5% up to 20%.

19. A product according to claim 17 in which the amount of iron measured as FeO is 5% to below 10%.

20. A product according to claim 17 in which the amount of SiO_2 is 32 to 45%.

21. A product according to claim 17 in which the amount of $Na_2O + K_2O$ is 6 to 10%.

22. The method of claim 1 wherein the step of selecting a mineral melt composition comprises forming one or more mineral melts having said oxide composition and determining the viscosity, dissolution rate and sintering temperature associated therewith.

23. The fibres of claim 16 in which the amount of silica is up to 42%.

24. The method of claim 4 in which the amount of silica is up to 42%.

* * * * *

-continued

$Na_2O + K_2O$	0 to 6%
TiO_2	0 to 6%
Other Elements	0 to 15%

The following are examples of suitable compositions for external cladding or pipe sections.

wt %	A	B	C	D	E	F	G
SiO_2	45.1	42.9	43.4	43	44.1	43.1	42.2
Al_2O_3	19.4	21.2	20.8	21.3	21.5	23	23.4
TiO_2	1.0	1.0	1.4	1.8	1.5	1.7	1.6
FeO	2.9	2.9	8.4	8.7	9.7	10.1	9.5
CaO	27.4	28.5	21.4	18.2	17.9	15.1	14.5
MgO	3.0	3.1	3.0	4.5	2.9	4.9	7.2
Na_2O	0.7	0.1	1.0	1.8	1.7	1.0	0.8
K_2O	0.4	0.3	0.5	0.7	0.6	0.9	0.8
SUM	100	100	100	100	100	100	100
Sinter temp ° C.	800	800	1000	1100	1100	1100	1100
Viscosity (poise, 1400° C.)	34	27	33	35	39	40	34
Dissolution rate pH 4.5 nm/day	58	79	59	49	46	55	51

Other suitable compositions for use as external cladding or pipe sections include:

Composition	SiO_2	Al_2O_3	TiO_2	FeO	CaO	MgO	Na_2O	K_2O	Sintering temp	Viscosity poise 1400° C.	Dissolution rate pH 4.5 nm per day
H	44.7	15.8	1.2	4.8	17.7	11.7	3.2	0.6	900	22	59
I	44.1	17.7	1.5	6.0	16.5	11.6	1.3	1.3	900	21	56
J	42.9	16.6	1.7	6.3	16.8	9.6	5.2	0.8	>1000	25	22
K	45.5	16.2	1.9	6.8	15.8	11.8	1.9	0.3	1.000	20	25
L	44.9	15.7	1.8	6.7	20.3	7.9	2.4	0.3	1.000	21	34
M	37.7	16.8	1.5	14.3	15.7	10.4	3.3	0.3	>1000	11	47

What is claimed is:

1. A product comprising man-made vitreous fibres formed of a composition which includes, by weight of oxides,

SiO_2	32 to 48%
Al_2O_3	18 to 30%
CaO	10 to 30%
MgO	2 to 20%
FeO	2 to 15%
$Na_2O + K_2O$	0 to 10%
TiO_2	0.5 to 6%
Other Elements	0 to 15%

and the composition has a viscosity at 1400° C. of 10 to 70 poise,

and the fibres have a dissolution rate determined from the silica concentration in solution one day and four days after shaking the fibres in Gambles solution at pH 4.5 of at least 20 nm per day.

2. A product according to claim 1 in which the amount of MgO is 5 to 20%, the amount of FeO is 5 to below 10%, the amount of TiO_2 is 0.5 to 4%, the amount of other elements is 0 to below 8%, and the viscosity is 12 to 70 poise.

3. A product according to claim 1 in which the amount of SiO_2 is not more than 42.0% and the amount of Al_2O_3 is at least 19.8%.

4. A product according to claim 1 in which the amount of SiO_2 is not more than 42.0% and the amount of Al_2O_3 is at least 20.0%.

5. A method of making man-made vitreous fibre products comprising selecting a composition in the form of a mineral melt and forming fibres from the melt wherein

a melt viscosity and a fibre dissolution rate in the presence of macrophages are determined for the composition and

a composition is selected which has a viscosity at 1400° C. of 10 to 70 poise and which provides fibres which have a dissolution rate determined from the silica concentration in solution one day and four days after shaking the fibres in Gambles solution at pH 4.5 of at least 20 nm per day, and which includes, by weight of oxides,

SiO_2	32 to 48%
Al_2O_3	18 to 30%
CaO	10 to 30%
MgO	2 to 20%
FeO	2 to 15%
$Na_2O + K_2O$	0 to 12%
TiO_2	0 to 6%

-continued

Other Elements	0 to 15%

and vitreous fibres are made from the selected composition.

6. A package containing a man-made vitreous fibre product wherein the fibres are formed of a composition having an analysis, as oxides, which includes

SiO_2	32 to 48%
Al_2O_3	18 to 30%
CaO	10 to 30%
MgO	2 to 20%
FeO	2 to 15%
$Na_2O + K_2O$	0 to 12%
TiO_2	0 to 6%
Other Elements	0 to 15%

and the composition has a viscosity at 1400° C. of 10 to 70 poise, and the fibres have a dissolution rate determined from the silica concentration in solution one day and four days after shaking the fibres in Gambles solution at pH 4.5 at least 20 nm per day,

and the package includes a label or insert referring to solubility at pH 4 to 5 and/or in environment created by macrophages in lung fluid.

1. A product comprising man-made vitreous fibres formed of a composition having an analysis, as oxides, which includes

SiO_2	32 to 48%
Al_2O_3	~~10 to 18%~~ above 16 to 28%
CaO	10 to 30%
MgO	2 to 20%
FeO	2 to 15%
$Na_2O + K_2O$	6 to 12%
TiO_2	0 to 6%
Other Elements	0 to 15%

and the composition has a viscosity at 1400° C. of 10 to 70 poise,

and the fibres have a dissolution rate determined from the silica concentration in solution one day and four days after shaking the fibres in Gambles solution at pH 4.5 of at least 20 nm per day.

6. Vitreous fibres which are biologically acceptable utilising fibres of a composition which includes, by weight of oxides,

SiO_2	32 to 48%
Al_2O_3	~~12 to 28%~~ above 16 to 28%
CaO	10 to 28%
MgO	2 to 20%
FeO	2 to 15%
$Na_2O + K_2O$	0 to 12%
TiO_2	0 to 4%
Other Elements	0 to 8%

which has a viscosity at 1400° C. of 10 to 70 poise and which provides fibres which have a dissolution rate determined from the silica concentration in solution one day and four days after shaking the fibres in Gambles solution at pH 4.5 of at least 20 nm per day.

9. Vitreous fibres according to claim 8 in the form of a bonded MMVF batt suitable for use as external roof or wall cladding or as pipe sections.

10. Vitreous fibres according to claim 8 which the amount of Al_2O_3 is 12 to 28%.

11. Vitreous fibres according to claim 10 in which the amount of Al_2O_3 is 18 to 26%.

12. Vitreous fibres according to claim 8 in which the amount of FeO is 5 to 10%.

13. Vitreous fibres according to claim 8 which the amount of TiO_2 is 0.5 to 4%.

14. Vitreous fibres according to claim 8 in which the combined amount of SiO_2 and Al_2O_3 is 56 to 68%.

15. A package according to claim 6 in which the amount of Al_2O_3 is 12 to 28%.

16. A package according to claim 6 in which the amount of Al_2O_3 is 18 to 26%.

17. A package according to claim 6 in which the amount of FeO is 5 to 10%.

18. A package according to claim 6 which the amount of TiO_2 is 0.5 to 4%.

19. A package according to claim 6 which the combined amount of SiO_2 and Al_2O_3 is 56 to 68%.

20. A method according to claim 5 in which the amount of Al_2O_3 is 12 to 28%.

21. A method according to claim 5 in which the amount of Al_2O_3 is 18 to 26%.

22. A method according to claim 5 in which the amount of FeO is 5 to 10%.

23. A method according to claim 5 which the amount of TiO_2 is 0.5 to 4%.

24. A method according to claim 5 which the combined amount of SiO_2 and Al_2O_3 is 56 to 68%.

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